

REMARKS

Status Of Application

Claims 1 and 3-13 are pending in the application; the status of the claims is as follows:

Claims 1, 3, and 7-11 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,601,352 to Okamura ("Okamura").

Claims 4-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Okamura in view of U.S. Patent No. 6,185,045 B1 to Hanano ("Hanano").

Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Okamura in view of Hanano, and further in view of U.S. Patent No. 6,150,998 to Travers et al ("Travers") and U.S. Patent No. 5,537,092 to Suzuki et al ("Suzuki").

Drawings

To date, no Notice of Draftsperson's Patent Drawing Review has been received. Applicants respectfully request receipt of this document when it becomes available.

Examiner's Interview

Applicants appreciate Examiner Lewis granting an interview with Applicants' representatives, Attorney Kathy Needleman and Attorney Douglas Sorensen on July 8, 2003. During the interview, all independent claims were discussed. Specifically discussed were the distinctions between specific claim limitations in the present independent claims and the cited art to Okamura. Applicants' representatives explained the primary distinctions between the present claims and Okamura as being that the device of Okamura forms a virtual image, while the device claimed in the present application forms a real image. Additionally, discussed was the distinction between the lens 7 of

Okamura and the screen of the present application. Specifically discussed was that the image of Okamura is not focused or formed on the lens 7, but is instead transmitted through diffusion plate 6, which functions as a transmissive screen and not a reflective screen. That is, according to Okamura, the image is projected from behind the diffusion plate, through the diffusion plate, and is not reflected therefrom or formed thereon. Examiner Lewis agreed that this was indeed a patentable distinction. He stated that amending the claims to contain claim language distinguishing this would make the claims allowable over the cited reference. One suggestion posed during the interview was to amend the claims to state that the image is formed on the screen. The Examiner agreed to consider claims amended to include this claimed limitation if presented. Claims 1, 11 and 13, as presented herein, have been amended to include claim language describing the image as being formed on the screen. Examiner Lewis agreed to contact Applicants' representatives by telephone should he have any questions, comments, or suggestions regarding the claim amendments presented.

35 U.S.C. § 102(b) Rejection

The rejection of claims 1, 3 and 7-11 under 35 U.S.C. § 102(b) as being anticipated by Okamura, is respectfully traversed based on the following.

Claims 3, and 7-10 depend from independent claim 1. Claim 1 includes:

- a projection optical system that projects an image displayed by said image display element;
- a screen on which the image projected by said projection optical system is formed;** and
- a combiner disposed between said projection optical system and said screen,

wherein said combiner transmits image light from said projection optical system and directs it to said screen, and reflects the image light reflected at the screen while simultaneously transmitting external light.

Claim 1 recites a screen on which the image projected by the projection optical system is **formed**. In contrast, the diffusion plate 6 of Okamura functions as a

transmissive screen, onto which the image is focused. (Okamura, col. 4, line 65 and col. 5, lines 50-53.) However, the diffusion plate 6 of Okamura does not function to **project** the image to the viewer. As discussed therein and as illustrated in Fig. 4 of Okamura, the device of Okamura is adapted to enlarge or magnify an image transmitted through diffusion plate 6 so that a virtual image is enlarged and more easily viewed by the observer. While the enlarged image can be viewed by the observer, it is only a virtual image. That is, no real image is actually "formed" or projected thereon. Thus, the diffusion plate 6 of Okamura is not for projecting an image and is not equivalent to the projection optical system claimed in claim 1 of the present application.

To provide anticipation, the reference must show every limitation of the claim. MPEP §2131. Okamura **does not** show or suggest every limitation of claim 1 of the present application. That is, Okamura does not disclose or suggest a screen onto which the image projected by the projection optical system is **formed**. Therefore, claim 1 is not anticipated by Okamura. As claim 1 is not anticipated by Okamura, claims 3 and 7-10 which depend either directly or indirectly therefrom are also not anticipated by Okamura.

Also in contrast to Okamura, Claim 11 recites a screen on which the image projected by said projection optical system is formed. As discussed above, Okamura does not disclose or suggest a screen on which the image projected by the projection optical system is **formed**. Thus, for at least the reasons presented above with respect to claim 1, claim 11 is also not anticipated by Okamura.

Accordingly, it is respectfully requested that the rejection of claims 1, 3 and 7-11 under 35 U.S.C. § 102(b) as being anticipated by Okamura, be reconsidered and withdrawn.

35 U.S.C. § 103(a) Rejections

Claims 4-6

The rejection of claims 4-6 under 35 U.S.C. § 103(a), as being unpatentable over Okamura in view of Hanano, is respectfully traversed based on the following.

Claims 4-6 depend from independent claim 1. As discussed above, Okamura does not disclose or suggest a screen on which an image projected by the projection optical system is formed.

Additionally, with respect to claims 4-6 which depend from independent claim 1, Okamura is silent as to an eyepiece optical system disposed between the combiner and the user, wherein the eyepiece optical system enlarges the image projected onto the screen as is recited by claim 4. Okamura is also silent as to an optical element disposed on an external side of the combiner with respect to the eyepiece optical system as is recited by claim 5. Further, Okamura is silent as to the system having a composite optical power of substantially zero as is recited by claim 6.

In order to overcome the obvious inadequacies of Okamura, the Examiner has combined Okamura with Hanano. Hanano is cited specifically for the purpose of teaching an eyepiece in conjunction with the optical element to produce an optical power of zero, as well as said image display apparatus being positioned substantially at said second end.

However, with respect to claim 1, Hanano fails to overcome the above described inadequacies of Okamura. Hanano teaches an image display apparatus having a projection optical system for projecting an image and an image display device which displays the image. The projection optical system of Hanano has a periphery bending optical device that distributes a part of light beams from the periphery of the image display device to the inside and outside of an image display area. That is, the projection optical system of Hanano has an edge portion having a refracting or reflecting action arranged such that the

refracting power for the periphery of the image display area is larger in the positive direction than the refracting power for the principal display area. The ocular optical system is preferably an optical system including a surface which has both transmitting and reflecting actions and which is tilted with respect to both the image display device and the visual axis so as to project an enlarged image of the image displayed by the image display device. *See* Hanano, col. 3, lines 27-59.

The apparatus of Hanano utilizes a series of mirrors which enlarge and project a virtual image while altering the direction of the image on the periphery of the display area before directing the image to an eye of an observer. That is, a real image is not projected to a screen by a projection optical system nor is a real image formed thereon. Further, Hanano fails to disclose or suggest that the combiner transmits image light from the projection optical system and directs it to said screen, and reflects the image light reflected at the screen while simultaneously transmitting external light.

To provide a *prima facie* case for obviousness, the combined references must show or suggest every limitation of the claim. MPEP §2143.03. Neither Okamura nor Hanano disclose or suggest a screen on which the image projected by the projection optical system is **formed**. Thus, for at least that reason, claim 1 is not rendered obvious by Okamura or Hanano, either singly or in combination.

Claims 4-6 depend either directly or indirectly from claim 1, and thus include every limitation of claim 1. As discussed above, neither Okamura nor Hanano disclose or suggest this limitation. Therefore, the combined references do not show or suggest every limitation of claim 1 and therefore do not show or suggest every limitation of claims 4-6. Thus, claims 4-6 are patentably distinct from the cited references and are not rendered obvious by Okamura or Hanano, either singly or in combination.

Accordingly, it is respectfully requested that the rejection of claims 4-6 under 35 U.S.C. § 103(a) as being unpatentable over Okamura in view of Hanano, be reconsidered and withdrawn.

Claim 13

The rejection of claim 13 under 35 U.S.C. § 103(a), as being unpatentable over Okamura in view of Hanano, and further in view of Travers and Suzuki, is respectfully traversed based on the following.

Claim 13 recites a head-piece adapted to be worn on a head of a wearer, the head of the wearer having a face, the head-piece comprising:

- a hood, said hood adapted to be positioned on the head of the wearer;
- a visor having a first end and a second end, said first end of said visor rotatably mounted to said hood such that said visor rotates from a first position, substantially covering the face of the wearer, to a second position not substantially covering the face of the wearer;
- an image display apparatus comprising:
 - an image display element;
 - a projection optical system that projects an image displayed by said image display element;
 - a screen on which the image projected by said projection optical system is formed;**
 - a combiner that reflects image light reflected at said screen, and transmits external light;
 - an eyepiece optical system disposed between said combiner and the wearer,
 - wherein said eyepiece optical system enlarges the image projected onto said screen; and
 - an optical element disposed on an external side of said combiner with respect to said eyepiece optical system,
 - wherein a composite optical power of said eyepiece optical system and said optical element is substantially zero, and
 - wherein said image display apparatus is positioned substantially at said second end of said visor.

Claim 13 requires a screen on which the image projected by said projection optical system is formed. Both Okamura and Hanano disclose systems which project only virtual images and not real images formed on a screen. Thus, this limitation is not disclosed or suggested by Okamura or Hanano, either singly or in combination.

In an attempt to overcome the inadequacies of the above cited references, the Examiner has cited Travers as disclosing a headset for the purpose of visual display that would be readily available to the skilled artisan for use in Head Mounted Display devices of Okamura in view of Hanano. Unfortunately, Travers does not disclose or suggest using a projection optical system to project and form an image on a screen.

Travers discloses a headset for noncircumferential engagement of the head which provides a suspended visual display while shielding a wearer's eyes from ambient light. The device of Travers is adapted to have no weight or bearing contact between the nose and the cheeks and the visual display or the headset such that the headset accommodates various head sizes by the cooperation of the brow piece and the nape strap in connection with the compensators of the arms. (*See* Travers, col. 2, lines 9-17 and col. 4, lines 27-51). Among other things, Travers does not disclose or suggest using a projection optical system to form an image on a screen. In actuality, Travers does not teach any particular method of forming an image. Thus, Travers cannot overcome the inadequacies of the above cited combination of references.

In an attempt to overcome the cited inadequacies of the cited combination of the references, the Examiner has relied on a combination with Suzuki. Suzuki is cited as illustrating a system wherein the image display is below eye level. Unfortunately, as with the devices of Okamura, Hanano, and Travers discussed above, the device of Suzuki projects a virtual image (Xo) and does not form a real image on a screen.

Thus, for at least the reason that none of the cited references discloses or suggests **a screen on which the image projected by said projection optical system is formed**, claim 13 is not rendered obvious by Okamura, Hanano, Travers, or Suzuki, either singly or in any combination.

Accordingly, it is respectfully requested that the rejection of claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Okamura in view of Hanano, and further in view of Travers and Suzuki, be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260.

Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee,

Application No. 09/615,233
Amendment dated 8/6/03
Reply to Office Action of May 8, 2003

and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's
Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

By: Kathy Needleman
Kathy E. Needleman
Registration No. 47,816
Attorney for Applicants

KEN/llb:jjk
SIDLEY AUSTIN BROWN & WOOD LLP
717 N. Harwood, Suite 3400
Dallas, Texas 75201
Direct: (214) 981-3474
Main: (214) 981-3300
Facsimile: (214) 981-3400
August 6, 2003

DAI 265540v7